Kit Revision Date: 27/08/2021

# 842ER SUPER SHIELD™ SILVER EPOXY CONDUCTIVE PAINT KIT

**MG Chemicals Multipart Product Kit**

This product is a kit made up of multiple parts. Each part is an independently packaged chemical component and has independent hazard assessments.

**Kit Content**

| *Part* | *Product Name* | *Product Use* |
|---|---|---|
| A | 842ER-A | Super Shield Silver conductive paint (epoxy resin) |
| B | 842ER-B | Super Shield Silver conductive paint (epoxy hardener) |

*Safety Data Sheets for each part listed above follow this cover sheet.*

## Transportation Instruction

Before offering this product kit for transport, read Section 14 for all parts listed above.

**842ER-A** **SUPER SHIELD SILVER EPOXY CONDUCTIVE PAINT**

# Safety Data Sheet

## Section 1: Identification

### Product Identifier and Other Means of Identification

**Product Identifier:** 842ER-A

**Other Means of Identification:** Super Shield Silver Epoxy Conductive Paint

**Related Part #** 842ER-60ML, 842ER-250ML, 842ER-900ML, 842ER-4.25L

### Recommended Use and Restriction on Use

**Use:** Silver conductive epoxy resin

**Uses Advised Against:** Not available

### Details of Manufacturer or Importer

**Manufacturer**
MG Chemicals
1210 Corporate Drive
Burlington, Ontario L7L 5R6
CANADA

| | | | |
|---|---|---|---|
| ☎ | +1-800-340-0772 | ☎ | +1-905-331-1396 |
| **Fax** | +1-800-340-0773 | **Fax** | +1-905-331-2682 |
| **E-mail** | support@mgchemicals.com | | |
| **Web** | www.mgchemicals.com | | |

**E-MAIL** (Competent Person): sds@mgchemicals.com

### Emergency Phone Number

**For hazardous material incidents ONLY** (leaks, spills, fires, exposures or accidents)
USA or CANADA—Call Verisk 3E at ***+1-866-519-4752*** or ***+1-760-476-3962***
(Service access code: 335388)

**For emergencies involving the transport of dangerous goods**; 24/7 service
CANADA—Call CANUTEC collect at ***+1-613-996-6666*** or ****666*** on cellular phones

## Section 2: Hazard(s) Identification

### Classification of Hazardous Chemical

#### GHS Categories

| Criteria | | Category | Signal Word | Pictograms |
|---|---|---|---|---|
| Flammable liquid | | 2 | Danger | Flame |
| Serious Eye Damage | | 1 | Danger | Corrosion |
| Sensitization | Skin | 1 | Warning | Exclamation |
| Skin Irritation | | 2 | Warning | Exclamation |
| Specific Target Organ Toxicity | Single Exposure | 3 | Warning | Exclamation |
| Hazardous to the Aquatic Environment | Chronic | 1 | Warning | Environment |

*Note:* The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity), which is opposite to HMIS and NFPA conventions. Severity category rankings do not allow comparisons between classes.

### Label Elements

| **Signal Word** | **DANGER** |
|---|---|
| **Pictograms** | **Hazard Statements** |
|  | H225: Highly flammable liquid and vapor |
|  | H318: Causes serious eye damage |
|  | H317: May cause an allergic skin reaction<br>H315: Causes skin irritation<br>H336: May cause dizziness or drowsiness |

*Section continued on the next page*

*Continued…*

| Pictograms | Hazard Statements |
|---|---|
|  | H410: Very toxic to aquatic life with long lasting effects |
| **Prevention** | **Precautionary Statements** |
| P102 | Keep out of reach of children. |
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233 | Keep container tightly closed. |
| P240 | Ground and bond container and receiving equipment. |
| P241 | Use explosion-proof equipment. |
| P243 | Take action to prevent static discharges. |
| P261 | Avoid breathing mist, vapors, and spray. |
| P264 | Wash hands thoroughly after handling. |
| P280 | Wear protective gloves and eye protection. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P273 | Avoid release to the environment. |
| **Response** | **Precautionary Statements** |
| P370 + P378 | In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. |
| P303 + P361 + P352 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Wash with plenty of water or shower. |
| P333 + P313 | If skin irritation or rash occurs: Get medical advice or attention. |
| P363 | Wash contaminated clothing before reuse. |
| P305 + P351 + P338, P310 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor. |
| P304 + P340, P319 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell. |
| P391 | Collect spillage. |

*Section continued on the next page*

*Continued…*

| Storage | Precautionary Statements |
|---|---|
| P403 + P235 | Store in a well-ventilated place. Keep cool. |
| P405 | Store locked up. |
| **Disposal** | **Precautionary Statements** |
| P501 | Dispose of contents in accordance to local, regional, national, and international regulations. |

## Hazards Not Otherwise Classified

| Other Criteria | Hazard Statements/Precautionary Statement | Signal Word | Pictograms |
|---|---|---|---|
| Defats skin | Repeated exposure may cause skin dryness or cracking. | None | None |
| Argyria | Long term exposure to silver powder or compounds can lead to an irreversible blue-grey discoloration of the skin. | None | None |

## Section 3: Composition/Information on Ingredients

| CAS # | Chemical Name | %(weight) |
|---|---|---|
| 7440-22-4 | silver | 46% |
| 110-19-0 | isobutyl acetate | 33% |
| 25085-99-8 | bisphenol-A-(epichlorhydrin) | 8% |
| 71-36-3 | butan-1-ol | 8% |
| 14807-96-6 | talc (non-asbestos fiber) | 2% |
| 123-86-4 | n-butyl acetate | 0.3% |

## Section 4: First-Aid Measures

| *Exposure Condition* | *GHS Code/Symptoms/Precautionary Statements* |
|---|---|
| **IF IN EYES** | P305 + P351 + P338, P310 |
| **Immediate Symptoms** | *irritation, redness, pain, burn, eye damage* |
| **Response** | Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>Immediately call a POISON CENTER or doctor. |
| **IF ON SKIN (or hair)** | P303 + P361 + P352, P333 + P317, P363 |
| **Immediate Symptoms** | *redness, irritation, rash, dry skin* |
| **Response** | Take off immediately all contaminated clothing. Wash with plenty of water or shower.<br>If skin irritation or rash occurs: Get medical help.<br>Wash contaminated clothing before reuse. |
| **IF INHALED** | P304 + P340, P319 |
| **Immediate Symptoms** | *cough, shortness of breath, dizziness, drowsiness, headaches* |
| **Response** | Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell. |
| **IF SWALLOWED** | P301 + P330, P331 |
| **Immediate Symptoms** | *abdominal pain, nausea, headaches, dizziness, drowsiness, vomiting* |
| **Response** | Rinse mouth. Do NOT induce vomiting. |

## Section 5: Fire-Fighting Measures

| | |
|---|---|
| **Extinguishing Media** | In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.<br>Use water spray to cool containers. |
| **Specific Hazards** | The vapors are heavier than air and may accumulate in low-lying areas. Vapors may travel long distances and ignite at an ignition source, which can cause a flashback or an explosion.<br>Prevent fire-fighting wash from entering waterway or sewer system. |
| **Combustion Products** | Produces carbon oxides (CO, $CO_2$) and silver oxides fumes. |
| **Fire-Fighter** | Wear self-contained breathing apparatus and full fire-fighting turnout gear. |

## Section 6: Accidental Release Measures

| | |
|---|---|
| **Personal Protection** | See personal protection recommendations in Section 8. |
| **Precautions for Response** | Avoid breathing mist, spray or vapors. Remove or keep away all sources of extreme heat or open flames. |
| **Environmental Precautions** | Avoid releasing to the environment. Prevent spill from entering drains and waterways. |
| **Containment Methods** | Contain with inert absorbent (such as soil, sand, vermiculite). |
| **Cleaning Methods** | Collect liquid in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wash spill area with soap and water to remove the last traces of residue. |
| **Disposal Methods** | Dispose of spill waste according to Section 13. |

## Section 7: Handling and Storage

**Prevention**

Keep out of reach of children.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Ground and bond container and receiving equipment. Use explosion-proof equipment. Take action to prevent static discharges.

Keep container tightly closed. Avoid breathing mist, vapors or spray.

Contaminated work clothing should not be allowed out of the workplace.

Avoid release to the environment.

**Handling**

Wear protective gloves and eye protection.

Take off contaminated clothing and was it before reuse.

Use only outdoors or in a well-ventilated area.

Wash hands thoroughly after handling.

Collect spillage.

**Storage**

Store in a well-ventilated place. Keep cool.

Store locked up.

## Section 8: Exposure Controls/Personal Protection

### Substances with Occupational Exposure Limit Values

| Chemical Name | Country/ Provinces | Long Term Exposure Limits (PEL) | Short Term Exposure Limits (STEL) |
|---|---|---|---|
| silver<br>*(metal dust, mist)*<br>*(metal)*<br>*(Ag and its compounds)*<br>*(metal, dust, fumes)* | ACGIH<br>U.S.A. OSHA PEL<br>Canada AB<br>Canada BC<br>Canada ON<br>Canada QC | 0.1 $mg/m^3$<br>0.01 $mg/m^3$<br>0.1 $mg/m^3$<br>0.01 $mg/m^3$<br>0.1 $mg/m^3$<br>0.1 $mg/m^3$ | Not established<br>Not established<br>Not established<br>0.03 $mg/m^3$<br>Not established<br>Not established |
| isobutyl acetate | ACGIH<br>U.S.A. OSHA PEL<br>Canada AB<br>Canada BC<br>Canada ON<br>Canada QC | 150 ppm<br>150 ppm<br>150 ppm<br>150 ppm<br>150 ppm<br>150 ppm | Not established<br>Not established<br>Not established<br>Not established<br>187 ppm<br>Not established |

*Section continued on the next page*

*Continued…*

| Chemical Name | Country/ Provinces | Long Term Exposure Limits (PEL) | Short Term Exposure Limits (STEL) |
|---|---|---|---|
| butan-1-ol | ACGIH | 20 ppm | Not established |
| | U.S.A. OSHA PEL | 100 ppm | Not established |
| | Canada AB | 20 ppm | Not established |
| | Canada BC | 15 ppm | 30 ppm (Ceiling) |
| | Canada ON | 20 ppm | Not established |
| | Canada QC | 50 ppm (Ceiling) | Not established |
| talc *(without asbestos fibers)* | ACGIH | 2 $mg/m^3$ | Not established |
| | U.S.A. OSHA PEL | 20 mppcf [a)] | Not established |
| | Canada AB | 2 $mg/m^3$ | Not established |
| | Canada BC | 2 $mg/m^3$ | Not established |
| | Canada ON | 2 $mg/m^3$ | Not established |
| | Canada QC | 3 $mg/m^3$ | Not established |
| n-butyl acetate | ACGIH | 150 ppm | Not established |
| | U.S.A. OSHA PEL | 150 ppm | Not established |
| | Canada AB | 150 ppm | 200 ppm |
| | Canada BC | 20 ppm | 200 ppm |
| | Canada ON | 150 ppm | Not established |
| | Canada QC | 150 ppm | 200 ppm |

*Note:* Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH[1], OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from suppliers' SDS were also consulted. Short term exposure limits (STEL) are for 15 min and long term permissible exposure limits (PEL) for 8 h.

a) Millions of particles per cubic foot air, based on impinge samples counted by light-field technique.

## Engineering Controls

**Ventilation** Keep airborne concentrations below the occupational exposure limits (OEL).

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## Personal Protective Equipment

| | |
|---|---|
| **Eye protection** | Wear appropriate protective eyeglasses or chemical safety goggles.<br><br>**RECOMMENDATION:** Ensure that glasses have side shields for lateral protection. |
| **Skin Protection** | For likely contacts, use of protective butyl rubber or other chemically resistant gloves.<br><br>For incidental contacts, use disposable natural rubber or other chemically resistant gloves. |
| **Respiratory Protection** | For over-exposures up to 10 x OEL of mist, vapors or spray, wear respirator such as a half-mask respirator with organic vapor cartridges.<br><br>Above 10 x OEL, use a positive-pressure, air-supplied respirator or a self-contained breathing apparatus.<br><br>**RECOMMENDATION:** Consult your local safety supply store to ensure that your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in Section 3. The respirator should be fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used. |

## General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

## Section 9: Physical and Chemical Properties

| | | | |
|---|---|---|---|
| **Physical State** | Liquid | **Lower Flammability Limit** [b] | 1% |
| **Appearance** | Metallic silver | **Upper Flammability Limit** [b] | 11% |
| **Odor** | Amine-like | **Vapor Pressure @20 °C** | >2.56 |
| **Odor Threshold** | Not available | **Vapor Density** | Not available |
| **pH** | Not available | **Relative Density @25 °C** | 1.65 |
| **Freezing/Melting Point** | Not available | **Solubility in Water** | Partially miscible |
| **Initial Boiling Point** [a] | 116 °C [241 °F] | **Partition Coefficient n-octanol/water** | Not available |
| **Flash Point** [a] | 18 °C [64 °F] | **Auto-ignition Temperature** [c] | >345 °C [653 °F] |
| **Evaporation Rate** | Not available | **Decomposition Temperature** | Not available |
| **Flammability** | Highly Flammable | **Viscosity @25°C** | 59 cP |

a) Values based on isobutyl acetate.
b) Values calculated using Raoult's Law and Le Chatelier principle for solvent components.
c) Value based on butan-1-ol.

## Section 10: Stability and Reactivity

| | |
|---|---|
| **Reactivity** | Not available |
| **Chemical Stability** | Chemically stable at normal temperatures and pressures. |
| **Conditions to Avoid** | Ignition sources, open flames, excessive heat, and incompatible substances. Low lying vapors may form explosive mixture with air. |
| **Incompatibilities** | Strong oxidizing agents, strong acids, strong bases |
| **Polymerization** | Will not occur |
| **Decomposition** | Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5. |

## Section 11: Toxicological Information

### Summary of Effects and Symptoms by Routes of Exposure

**Eyes** Causes severe irritation, redness, pain, burns and/or eye damage.

**Skin** Causes skin irritation, redness, rash, or dry skin.

**Inhalation** May cause cough, shortness of breath, dizziness, drowsiness, or headaches.

**Ingestion** May cause nausea, sore throat, abdominal pain, and diarrhea (also see inhalation symptoms).

**Chronic** Exposure to silver powder may also cause argyria, an irreversible blue-grey discoloration of the skin.

### Acute Toxicity (Lethal Exposure Concentrations)

| Chemical Name | LD50 oral | LD50 dermal | LC50 inhalation |
|---|---|---|---|
| silver | >2 000 mg/kg Rat | >2 000 mg/kg Rat | 5.16 mg/m$^3$ 4 h Rat (dust) |
| isobutyl acetate | 13 431 mg/kg Rat | >17 400 mg/kg Rat | Not available |
| bisphenol-A-(epichlorhydrin) | 11 400 mg/kg Rat | 100 pph 7 h Rabbit | Not available |
| butan-1-ol | 790 mg/kg Rat | 3 400 mg/kg Rabbit | Not available |
| talc | Not available | Not available | Not available |
| n-butyl acetate | 10 768 mg/kg Rat | >17 600 mg/kg Rabbit | >10 mg/L 4 h Rat (vapor) |

*Note:* Toxicity data from the ECHA database was consulted. The data from supplier SDSs were also consulted.

Section continued on the next page

## Other Toxicological Effects

| | |
|---|---|
| **Skin corrosion/irritation** | The bisphenol-A and butan-1-ol are known skin irritants. |
| **Serious eye damage/irritation** | The butan-1-ol in the mixture is expected to cause severe eye irritation or irreversible eye damage. |
| **Sensitization** (allergic reactions) | Exposure to the epoxy resin may cause an allergic skin reaction. |
| **Carcinogenicity** (risk of cancer) | Based on available data, the classification criteria are not met. |
| **Mutagenicity** (risk of heritable genetic effects) | Based on available data, the classification criteria are not met. |
| **Reproductive Toxicity** (risk to sex functions) | Based on available data, the classification criteria are not met. |
| **Teratogenicity** (risk of fetus malformation) | Based on available data, the classification criteria are not met. |
| **STOT-single exposure** | The isobutyl acetate and butan-1-ol can affect the central nervous system by inhalation causing drowsiness or dizziness, and they are a respiratory system irritant. |
| **STOT-repeated exposure** | Based on available data, the classification criteria are not met. |
| **Aspiration hazard** | Based on available data, the classification criteria are not met. There are no cat 1 ingredients present. |

## Section 12: Ecological Information

Ecological classifications are based on the IMDG/GHS criteria in conjunction with ecotoxicological data from our suppliers, the European Chemical Agency database (http://echa.europa.eu), and other reliable sources.

Contains silver of less than a 1 mm but more than 100 nm (larger than nanoparticles), which release ionic silver levels that are very toxic to the environment. While massive silver and copper are insoluble in water, their powders are considered sufficiently soluble to give rise to an ecological hazard by EU regulators. The classification that follows takes into account to chronic aqueous toxicity of category 1 (M = 10 for silver) of the EU.

In Europe, similar the epoxy resins with CAS# 25085-99-8 and MW <700 is generally classified as chronic category 2 marine pollutant. It generally has LC50 96 h of >1 mg/L but ≤10 mg/L.

Isobutyl acetate, butan-1-ol, talc (non-asbestos fiber), and n-butyl acetate are not classifiable as an environmental toxicant (with minimal LC50 of >100 mg/L).

### Acute Ecotoxicity

Category 1

Very toxic to aquatic life

### Chronic Ecotoxicity

Category 1

Very toxic to aquatic life with long lasting effects

Avoid release to the environment. Collect spillage.

**Biodegradability**

Solvent part expected to be biodegradable, but not the polymer or metal filler. The volatile solvent constituents will oxidize rapidly in air by photochemical reaction.

### Other Effects

VOC *Actual* Volatile Organic Content) = 44% [734 g/L]

## Section 13: Disposal Information

Dispose of contents in accordance with all local, regional, national, and international regulations.

## Section 14: Transport Information

### Ground

**Refer to TDG regulations** (Canadian Transportation of Dangerous Goods regulations); **USA CFR 49 Regulations** (Parts 100 to 185).

Sizes 5 L and under
*842ER-60ML, 842ER-250ML, 842ER-900ML, 842ER-4.25L*
**Limited Quantity**

*FOR REFERENCE ONLY*

**UN number:** UN1263
**Shipping Name:** PAINT
**Class:** 3
**Packing Group:** II
**Marine Pollutant:** Yes

### Air

**Refer to ICAO-IATA Dangerous Goods Regulations.**

Sizes 0.5 L and under
*842ER-60ML, 842ER-250ML*
**Limited Quantity**

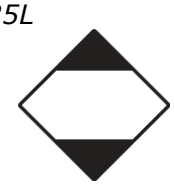
Total Net QTY per package 1 L


Sizes up to 5 L (passenger), 60 L (cargo)
*842ER-900ML, 842ER-4.25L*
**UN number:** UN1263
**Shipping Name:** PAINT
**Class:** 3
**Packing Group:** II
**Marine Pollutant:** Yes


### Sea

**Refer to IMDG regulations.**

Sizes 5 L and under
*842ER-60ML, 842ER-250ML, 842ER-900ML,842ER-4.25L*
**Limited Quantity**



*FOR REFERENCE ONLY*

**UN number:** UN1263
**Shipping Name:** PAINT
**Class:** 3
**Packing Group:** II
**Marine Pollutant:** Yes

*Note:* **Shipper must be appropriately <u>trained and certified</u> before involvement with the transport of dangerous goods.**

## Section 15: Regulatory Information

### Canada

**Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)**

All hazardous ingredients are listed on the DSL/NDSL.

**Hazardous Products Act (R.S.C., 1985, c. H-3)**

The safety data sheet and label comply with the Hazardous Product Act and WHMIS 2015.

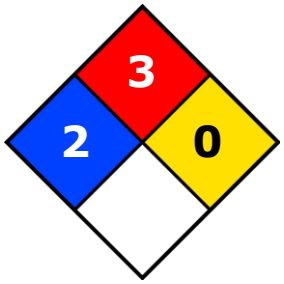
### USA

### Other Classifications

**HMIS® RATING**

| | |
|---|---|
| **HEALTH:** | * 2 |
| **FLAMMABILITY:** | 3 |
| **PHYSICAL HAZARD:** | 0 |
| **PERSONAL PROTECTION:** | |

**NFPA® 704 CODES**




*Approximate HMIS and NFPA Risk Ratings Legend*:
0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

**CAA** (Clean Air Act, USA)

This product does not contain any class 1 ozone depleting substances.

This product does not contain any class 2 ozone depleting substances.

This product does not contain substances that are listed as hazardous air pollutants.

**EPCRA** (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45

This product contains silver (CAS# 7440-22-4; reportable quantity = 1 000 lb), which is subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

This product contains isobutyl acetate (CAS# 110-19-0), which are subject to the CERCLA reporting requirements at the 5 000 lb (2 268 kg) threshold.

This product contains n-butyl acetate (CAS# 123-86-4), which is subject to the CERCLA reporting requirements at the 5 000 lb (2 268 kg) threshold.

*Section continued on the next page*

**TSCA** (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

**California Proposition 65** (Chemicals known to cause cancer or reproductive toxicity, USA).

This product does not contain any substances known to be listed in California.

### Europe

**RoHS** (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, PBDE's, DEHP, BBP, DBP, or DIBP and complies with European RoHS regulations.

**WEEE** (Waste Electrical and Electronic Equipment Directive)

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

## Section 16: Other Information

| | |
|---|---|
| **MSDS Prepared by** | MG Chemicals' Regulatory Department |
| **Date of Creation** | 03 October 2023 |
| **Supersedes** | 11 June 2020 |
| **Reason for Changes:** | Minor changes. |

**References**

1) ACGIH *2023 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices*, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2023).

*Section continued on the next page*

***Abbreviations***

| | |
|---|---|
| ACGIH | American Conference of Governmental Industrial Hygienists (USA) |
| EC50 | Half maximal effective concentration |
| EL50 | Half maximal effective loading |
| NOELR | No observable effect loading ratio |
| GHS | Globally Harmonized System of Classification of Labeling of Chemicals |
| LC50 | Lethal Concentration 50% |
| LCLo | Lowest published lethal concentration |
| LD50 | Lethal Dose 50% |
| PEL | Permissible Exposure Limit |
| STEL | Short-Term Exposure Limit |
| TCLo | Lowest published toxic concentration |
| TWA | Time Weighted Average |
| VOC | Volatile Organic Content |

**Technical Queries** Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at www.mgchemicals.com.

Email: support@mgchemicals.com

**Mailing Addresses**

*Manufacturing & Support*
1210 Corporate Drive
Burlington, Ontario, Canada
L7L 5R6

*Head Office*
9347–193rd Street
Surrey, British Columbia, Canada
V4N 4E7

**Disclaimer** This safety data sheet is provided as an information resource only. *M.G. Chemicals, Ltd.* believes the information contained herein is accurate and compiled from reliable sources. It is the responsibility of the user to query and verify any information seeming suspect where doubt on the validity may exist. The buyer assumes all responsibility of using and handling the product in accordance with local, regional, national, and international regulations.

**842ER-B** **SUPER SHIELD SILVER EPOXY CONDUCTIVE PAINT**

# Safety Data Sheet

## Section 1: Identification

### Product Identifier and Other Means of Identification

**Product Identifier:** 842ER-B

**Other Means of Identification:** Super Shield Silver Epoxy Conductive Paint

**Related Part #** 842ER-60ML**,** 842ER-250ML, 842ER-900ML, 842ER-4.25L

### Recommended Use and Restriction on Use

**Use:** Silver conductive epoxy hardener

**Uses Advised Against:** Not applicable

### Details of Manufacturer or Importer

**Manufacturer**
MG Chemicals
1210 Corporate Drive
Burlington, Ontario L7L 5R6
CANADA

| | | | |
|---|---|---|---|
| ☎ | +1-800-340-0772 | ☎ | +1-905-331-1396 |
| **Fax** | +1-800-340-0773 | **Fax** | +1-905-331-2682 |
| **E-mail** | support@mgchemicals.com | | |
| **Web** | www.mgchemicals.com | | |

**E-MAIL** (Competent Person): sds@mgchemicals.com

### Emergency Phone Number

**For hazardous material incidents ONLY** (leaks, spills, fires, exposures or accidents)
USA or CANADA—Call Verisk 3E at ***+1-866-519-4752*** or ***+1-760-476-3962***
(Service access code: 335388)

**For emergencies involving the transport of dangerous goods**; 24/7 service
CANADA—Call CANUTEC collect at ***+1-613-996-6666*** or ****666*** on cellular phones

## Section 2: Hazard(s) Identification

### Classification of Hazardous Chemical

#### GHS Categories

| Criteria | | Category | Signal Word | Pictograms |
|---|---|---|---|---|
| Flammable Liquid | | 2 | Danger | Flame |
| Serious Eye Damage | | 1 | Danger | Corrosion |
| Sensitization | Skin | 1 | Warning | Exclamation |
| Skin Irritation | | 2 | Warning | Exclamation |
| Specific Target Organ Toxicity | Single Exposure | 3 | Warning | Exclamation |
| Hazardous to the Aquatic Environment | Chronic | 2 | None | Environment |

*Note:* The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity), which is opposite to HMIS and NFPA conventions. Severity category rankings do not allow comparisons between classes.

### Label Elements

| **Signal Word** | **DANGER** |
|---|---|
| **Pictograms** | **Hazard Statements** |
|  | H225: Highly flammable liquid and vapor |
|  | H318: Causes serious eye damage |
|  | H317: May cause an allergic skin reaction<br>H315: Causes skin irritation<br>H336: May cause dizziness or drowsiness |

*Section continued on the next page*

*Continued…*

| **Pictograms** | **Hazard Statements** |
|---|---|
|  | H411: Toxic to aquatic life with long lasting effects |
| **Prevention** | **Precautionary Statements** |
| P201 | Keep out of reach of Children |
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233 | Keep container tightly closed. |
| P240 | Ground and bond container and receiving equipment. |
| P241 | Use explosion-proof equipment. |
| P243 | Take action to prevent static discharges. |
| P261 | Avoid breathing mist, vapors, and spray. |
| P264 | Wash hands thoroughly after handling. |
| P280 | Wear protective gloves and eye protection. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P273 | Avoid release to the environment. |
| **Response** | **Precautionary Statements** |
| P370 + P378 | In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. |
| P303 + P361 + P352 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Wash with plenty of water or shower. |
| P333 + P313 | If skin irritation or rash occurs: Get medical advice or attention. |
| P363 | Wash contaminated clothing before reuse. |
| P305 + P351 + P338, P310 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor. |
| P304 + P340, P319 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell. |
| P391 | Collect spillage. |

*Section continued on the next page*

*Continued…*

| Storage | Precautionary Statements |
|---|---|
| P403 + P235 | Store in a well-ventilated place. Keep cool. |
| P405 | Store locked up. |
| **Disposal** | **Precautionary Statements** |
| P501 | Dispose of contents in accordance to local, regional, national, and international regulations. |

## Hazards Not Otherwise Classified

| Other Criteria | Hazard Statements/Precautionary Statement | Signal Word | Pictograms |
|---|---|---|---|
| Defats skin | Repeated exposure may cause skin dryness or cracking. | None | None |

## Section 3: Composition/Information on Ingredients

| CAS # | Chemical Name | %(weight) |
|---|---|---|
| 110-19-0 | isobutyl acetate | 48% |
| 68410-23-1 | fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines | 34% |
| 71-36-3 | 1-butanol | 8% |
| 67-64-1 | acetone | 6% |
| 112-24-3 | triethylenetetramine | 3% |

## Section 4: First-Aid Measures

| *Exposure Condition* | *GHS Code/Symptoms/Precautionary Statements* |
|---|---|
| **IF IN EYES** | P305 + P351 + P338, P310 |
| **Immediate Symptoms** | *irritation, redness, pain, burn, eye damage* |
| **Response** | Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>Immediately call a POISON CENTER or doctor. |

*Section continued on the next page*

| | |
|---|---|
| **IF ON SKIN (or hair)** | P303 + P361 + P352, P333 + P317, P363 |
| **Immediate Symptoms** | *redness, irritation, rash, dry skin* |
| **Response** | Take off immediately all contaminated clothing. Wash with plenty of water or shower.<br>If skin irritation or rash occurs: Get medical help.<br>Wash contaminated clothing before reuse. |
| **IF INHALED** | P304 + P340, P319 |
| **Immediate Symptoms** | *cough, shortness of breath, dizziness, drowsiness, headaches* |
| **Response** | Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell. |
| **IF SWALLOWED** | P301 + P330, P331 |
| **Immediate Symptoms** | *abdominal pain, nausea, headaches, dizziness, drowsiness, vomiting* |
| **Response** | Rinse mouth. Do NOT induce vomiting. |

## Section 5: Fire-Fighting Measures

| | |
|---|---|
| **Response** | In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.<br>Use water spray to cool containers. |
| **Specific Hazards** | The vapors are heavier than air and may accumulate in low-lying areas. Vapors may travel long distances and ignite at an ignition source, which can cause a flashback or an explosion.<br>Prevent fire-fighting wash from entering waterway or sewer system. |
| **Combustion Products** | Produces carbon oxides (CO, $CO_2$) and nitrogen oxides ($NO_x$). |
| **Fire-Fighter** | Wear self-contained breathing apparatus and full fire-fighting turnout gear. |

## Section 6: Accidental Release Measures

| | |
|---|---|
| **Personal Protection** | See personal protection recommendations in Section 8. |
| **Precautions for Response** | Avoid breathing mist, spray or vapors. Remove or keep away all sources of extreme heat or open flames. |
| **Environmental Precautions** | Prevent spill from entering drains and waterways. |
| **Containment Methods** | Contain with inert absorbent (such as soil, sand, vermiculite). |
| **Cleaning Methods** | Collect liquid in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wash spill area with soap and water to remove the last traces of residue. |
| **Disposal Methods** | Dispose of spill waste according to Section 13. |

## Section 7: Handling and Storage

| | |
|---|---|
| **Prevention** | Keep out of reach of children. |
| | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| | Ground and bond container and receiving equipment. Use explosion-proof equipment. Take action to prevent static discharges. |
| | Keep container tightly closed.Avoid breathing mist, vapors or spray. |
| | Contaminated work clothing should not be allowed out of the workplace. |
| | Avoid release to the environment. |
| **Handling** | Wear protective gloves and eye protection. |
| | Take off contaminated clothing and was it before reuse. |
| | Use only outdoors or in a well-ventilated area. |
| | Wash hands thoroughly after handling. |
| | Collect spillage. |
| **Storage** | Store in a well-ventilated place. Keep cool. |
| | Store locked up. |

## Section 8: Exposure Controls/Personal Protection

### Substances with Occupational Exposure Limit Values

| Chemical Name | Country/ Provinces | Long Term Exposure Limits (PEL) | Short Term Exposure Limits (STEL) |
|---|---|---|---|
| isobutyl acetate | ACGIH | 150 ppm | Not established |
| | U.S.A. OSHA PEL | 150 ppm | Not established |
| | Canada AB | 150 ppm | Not established |
| | Canada BC | 150 ppm | Not established |
| | Canada ON | 150 ppm | 187 ppm |
| | Canada QC | 150 ppm | Not established |
| acetone | ACGIH | 500 ppm | 750 ppm |
| | U.S.A. OSHA PEL | 1 000 ppm | Not established |
| | Canada AB | 500 ppm | 750 ppm |
| | Canada BC | 250 ppm | 500 ppm |
| | Canada ON | 500 ppm | 750 ppm |
| | Canada QC | 750 ppm | 1 000 ppm |
| butan-1-ol | ACGIH | 20 ppm | Not established |
| | U.S.A. OSHA PEL | 100 ppm | Not established |
| | Canada AB | 20 ppm | Not established |
| | Canada BC | 15 ppm | 30 ppm (Ceiling) |
| | Canada ON | 20 ppm | Not established |
| | Canada QC | 50 ppm (Ceiling) | Not established |
| triethylenetetramine | ACGIH | Not established | Not established |
| | U.S.A. OSHA PEL | Not established | Not established |
| | U.S.A (WEEL) | 1 ppm | Not established |
| | Canada AB | Not established | Not established |
| | Canada BC | Not established | Not established |
| | Canada ON | 0.5 mg/m$^3$ (Skin) [a)] | Not established |

*Note:* Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH[1], OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from suppliers' SDS were also consulted. Short term exposure limits (STEL) are for 15 min and long-term permissible exposure limits (PEL) for 8 h.

a) Skin—can be absorbed through the skin.

### Engineering Controls

**Ventilation** Keep airborne concentrations below the occupational exposure limits (OEL).

*Section continued on the next page*

## Personal Protective Equipment

| | |
|---|---|
| **Eye protection** | Wear appropriate protective eyeglasses or chemical safety goggles.<br><br>**RECOMMENDATION:** Ensure that glasses have side shields for lateral protection. |
| **Skin Protection** | For likely contacts, use of protective butyl rubber or other chemically resistant gloves.<br><br>For incidental contacts, use disposable natural rubber or other chemically resistant gloves. |
| **Respiratory Protection** | For over-exposures up to 10 x OEL of mist, vapors or spray, wear respirator such as a half-mask respirator with organic vapor cartridges.<br><br>Above 10 x OEL, use a positive-pressure, air-supplied respirator or a self-contained breathing apparatus.<br><br>**RECOMMENDATION:** Consult your local safety supply store to ensure that your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in Section 3. The respirator should be fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used. |

## General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

## Section 9: Physical and Chemical Properties

| | | | |
|---|---|---|---|
| **Physical State** | Liquid | **Lower Flammability Limit** [b] | 2% |
| **Appearance** | Pale yellow | **Upper Flammability Limit** [b] | 12% |
| **Odor** | Amine-like | **Vapor Pressure @20 °C** | Not available |
| **Odor Threshold** | Not available | **Vapor Density** | >2.01 |
| **pH** | Not available | **Relative Density @25 °C** | 0.90 |
| **Freezing/Melting Point** | Not available | **Solubility in Water** | Partially miscible |
| **Initial Boiling Point** [a] | 56 °C [132 °F] | **Partition Coefficient n-octanol/water** | Not available |
| **Flash Point** [a] | -17 °C [1.4 °F] | **Auto-ignition Temperature** | >330 °C [626 °F] |
| **Evaporation Rate** | Not available | **Decomposition Temperature** | Not available |
| **Flammability** | Highly Flammable | **Viscosity @25°C** | 22 cP |

a) Values based on acetone component.
b) Values calculated using Raoult's Law and Le Chatelier principle for solvent components.

## Section 10: Stability and Reactivity

| | |
|---|---|
| **Reactivity** | Not available |
| **Chemical Stability** | Chemically stable at normal temperatures and pressures. |
| **Conditions to Avoid** | Ignition sources, open flames, excessive heat, and incompatible substances. Low lying vapors may form explosive mixture with air. |
| **Incompatibilities** | Strong oxidizing agents, strong acids, strong bases |
| **Polymerization** | Will not occur |
| **Decomposition** | Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5. |

## Section 11: Toxicological Information

### Summary of Effects and Symptoms by Routes of Exposure

| | |
|---|---|
| **Eyes** | Causes severe irritation, redness, pain, burns and/or eye damage. |
| **Skin** | Causes skin irritation, redness, rash, or dry skin. |
| **Inhalation** | May cause cough, shortness of breath, dizziness, drowsiness, or headaches. |
| **Ingestion** | May cause nausea, sore throat, abdominal pain, and diarrhea (also see inhalation symptoms). |
| **Chronic** | None known |

### Acute Toxicity (Lethal Exposure Concentrations)

| Chemical Name | LD50 oral | LD50 dermal | LC50 inhalation |
|---|---|---|---|
| isobutyl acetate | 13 431 mg/kg Rat | >17 400 mg/kg Rat | Not available |
| Fatty acids, C18-unsatd., dimers,… | >5 000 mg/kg | >5 000 mg/kg | Not available |
| butan-1-ol | 790 mg/kg Rat | 3 400 mg/kg Rabbit | Not available |
| acetone | 5 800 mg/kg Rat | 20 mL/kg Rabbit [a)] | 16 000 ppm 4 h Rat [a)] |
| triethylenetetramine | 2 500 mg/kg Rat | 805 mg/kg Rabbit | Not available |

*Note:* Toxicity data from the ECHA database was consulted. The data from supplier SDSs' were also consulted.

*Section continued on the next page*

## Other Toxicological Effects

| | |
|---|---|
| **Skin corrosion/irritation** | The mixture of triethylenetetramine and fatty acids, C18-unsatd., dimers causes skin irritation. |
| **Serious eye damage/irritation** | The mixture of triethylenetetramine and fatty acids, C18-unsatd., dimers causes eye damage. |
| **Sensitization** (allergic reactions) | The mixture of triethylenetetramine and fatty acids, C18-unsatd., dimers may cause allergic skin reaction. |
| **Carcinogenicity** (risk of cancer) | Based on available data, the classification criteria are not met. |
| **Mutagenicity** (risk of heritable genetic effects) | Based on available data, the classification criteria are not met. |
| **Reproductive Toxicity** (risk to sex functions) | Based on available data, the classification criteria are not met. |
| **Teratogenicity** (risk of fetus malformation) | Based on available data, the classification criteria are not met. |
| **STOT-single exposure** | The isobutyl acetate, 1-butan-1-ol, and acetone components can affect the central nervous system by inhalation causing drowsiness or dizziness. |
| **STOT-repeated exposure** | Based on available data, the classification criteria are not met. |
| **Aspiration hazard** | Based on available data, the classification criteria are not met. There are no cat 1 ingredients present. |

## Section 12: Ecological Information

Ecological classifications are based on the IMDG/GHS criteria in conjunction with ecotoxicological data from our suppliers, the European Chemical Agency database (http://echa.europa.eu), and other reliable sources.

The fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines (CAS# 68410-23-1) were classified as a chronic category 2 environmental toxicant (not readily biodegradable, LC50 range of 1—10 mg/L for fish; EC0 bacterial >10 and ≤100 mg/L).

Isobutyl acetate, 1-butanol, acetone, and triethylenetetramine are not classifiable as an environmental toxicant (with minimal LC50 of >100 mg/L).

*Section continued on the next page*

### Acute Ecotoxicity

The component substances are not classifiable as an environmental toxicant.

### Chronic Ecotoxicity

Category 2

Toxic to aquatic life with long lasting effects

Avoid release to the environment. Collect spillage.

**Biodegradability**

Not readily biodegradable

### Other Effects

VOC *(*Volatile Organic Content) = 56% [510 g/L]

## Section 13: Disposal Information

Dispose of contents in accordance with all local, regional, national, and international regulations.

## Section 14: Transport Information

### Ground

**Refer to TDG regulations** (Canadian Transportation of Dangerous Goods regulations); **USA CFR 49 Regulations** (Parts 100 to 185).

| | |
|---|---|
| Sizes 5 L and under<br>*842ER-60ML, 842ER-250ML, 842ER-900ML, 842ER-4.25L*<br>**Limited Quantity**<br>  | *FOR REFERENCE ONLY*<br><br>**UN number:** UN1263<br>**Shipping Name:** PAINT<br>**Class:** 3<br>**Packing Group:** II<br>**Marine Pollutant:** Yes |

*Section continued on the next page*

## Air

| **Refer to ICAO-IATA Dangerous Goods Regulations.** | |
|---|---|
| Sizes 0.5 L and under<br>*842ER-60ML, 842ER-250ML*<br>**Limited Quantity**<br><br>Total Net QTY per package 1 L<br><br>  <br> | Sizes up to 5 L (passenger), 60 L (cargo)<br>*842ER-900ML, 842ER-4.25L*<br>**UN number:** UN1263<br>**Shipping Name:** PAINT<br>**Class:** 3<br>**Packing Group:** II<br>**Marine Pollutant:** Yes<br><br>  <br> |

## Sea

| **Refer to IMDG regulations.** | |
|---|---|
| Sizes 5 L and under<br>*842ER-60ML, 842ER-900ML, 842ER-4.25L*<br>**Limited Quantity**<br><br>  | *FOR REFERENCE ONLY*<br><br>**UN number:** UN1263<br>**Shipping Name:** PAINT<br>**Class:** 3<br>**Packing Group:** II<br>**Marine Pollutant:** Yes |

*Note:* **Shipper must be appropriately <u>trained and certified</u> before involvement with the transport of dangerous goods.**

# Section 15: Regulatory Information

## Canada

**Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)**

All hazardous ingredients are listed on the DSL/NDSL.

**Hazardous Products Act (R.S.C., 1985, c. H-3)**

The safety data sheet and label comply with the Hazardous Product Act and WHMIS 2015.

*Section continued on the next page*

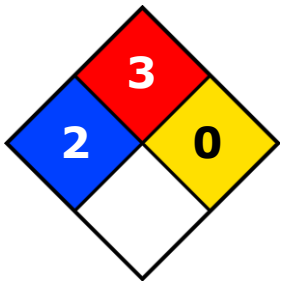
## USA

### Other Classifications

**HMIS® RATING**

| | |
|---|---|
| **HEALTH:** | * 2 |
| **FLAMMABILITY:** | 3 |
| **PHYSICAL HAZARD:** | 0 |
| **PERSONAL PROTECTION:** | |

**NFPA® 704 CODES**




*Approximate HMIS and NFPA Risk Ratings Legend*:
0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

**CAA** (Clean Air Act, USA)

This product does not contain any class 1 ozone depleting substances.

This product does not contain any class 2 ozone depleting substances.

This product does not contain substances that are listed as hazardous air pollutants.

**EPCRA** (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45

This product contains isobutyl acetate (CAS# 110-19-0), which are subject to the CERCLA reporting requirements at the 5 000 lb (2 268 kg) threshold.

This product contains acetone (CAS# 67-64-1), which are subject to the CERCLA reporting requirements at the 5 000 lb (2 268 kg) threshold.

**TSCA** (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

**California Proposition 65** (Chemicals known to cause cancer or reproductive toxicity, USA).

This product does not contain any of the listed substances.

*Section continued on the next page*

## Europe

**RoHS** (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, PBDE's, DEHP, BBP, DBP, or DIBP and complies with European RoHS regulations.

**WEEE** (Waste Electrical and Electronic Equipment Directive)

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

## Section 16: Other Information

| | |
|---|---|
| **SDS Prepared by** | MG Chemicals Regulatory Department |
| **Date of Creation** | 03 October 2023 |
| **Supersedes** | 11 June 2020 |
| **Reason for Changes:** | Minor changes. |

**References**

1) ACGIH *2023 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices*, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2023).

***Abbreviations***

| | |
|---|---|
| ACGIH | American Conference of Governmental Industrial Hygienists (USA) |
| EC50 | Half maximal effective concentration |
| EL50 | Half maximal effective loading |
| NOELR | No observable effect loading ratio |
| GHS | Globally Harmonized System of Classification of Labeling of Chemicals |
| LC50 | Lethal Concentration 50% |
| LCLo | Lowest published lethal concentration |
| LD50 | Lethal Dose 50% |
| PEL | Permissible Exposure Limit |
| STEL | Short-Term Exposure Limit |
| TCLo | Lowest published toxic concentration |
| TWA | Time Weighted Average |
| VOC | Volatile Organic Content |

*Section continued on the next page*

**Technical Queries**

Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at www.mgchemicals.com.

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